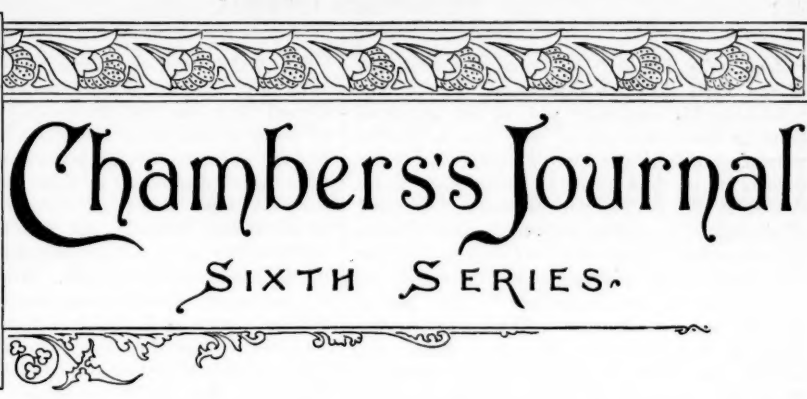


Chambers's Journal

SIXTH SERIES.



THE DARK CABINET.

By A. ANDERSON.



WHEN the Englishman drops a confidential communication into the letter-box he has no misgivings that his missive will be opened and its contents read and copied before it comes into the hands of the person to whom it is addressed. In reality, though we hardly realise it, the inviolability of our correspondence is one of the many precious privileges we enjoy as a matter of course, the mass of which make up what we understand by 'liberty.' To find a different state of things prevailing we need make no more hazardous journey than the short sea-passage that separates Dover from Calais.

During the crisis in the throes of which France is still writhing the French Radicals have not been backward in insisting on the burlesque character of the scenes of which the War Office is the theatre. Surely a Gilbert, even in his best moments of inspiration, never imagined anything more ludicrous and topsy-turvy than a score of stalwart, fiercely-moustachioed professional fighting-men, accoutred in all the glittering panoply of war, who pass their days from morning to night laboriously piecing together filthy little scraps of paper supposed to have been grubbed out of some dust-bin or wastepaper-basket in one of the foreign embassies. The branch of the War Office where this sort of thing goes on is known as the Intelligence Department!

It is said, and more than probably with considerable truth, that the booted and spurred warriors are habitually hoodwinked in the most outrageous manner. It would be strange indeed were it otherwise. Once it is known that there is a place where chinking golden louis d'or are to be obtained in exchange for a packet of dirty paper, provided the latter comes from certain other specified places, the entire clan of *chevaliers d'industrie* is put on its metal; and when your *chevalier d'industrie* is put on his metal, there are not many true chevaliers who can hope to play successfully against him.

In spite of the vigorous denunciations of the

Clemenceaus, the De Pressensés, and the rest, however, the great mass of the French public hear these monstrous stories with almost unruffled countenance! This is probably because espionage of one kind and another is known to be so commonly practised that it has come to be regarded as the most natural thing in the world. A thousand proofs of this might be given. One will suffice. The French author places his hero, whom he has represented to us as a paragon of all the manly virtues, in a room by himself. He hears the sound of voices in an adjoining chamber. His curiosity is at once aroused; and, without any preamble, we see him creeping on tiptoe to the door of the room whence the sounds proceed, and putting his ear to the keyhole, like an inquisitive scullerymaid. Other men similarly situated to the Frenchman might perform a similar action; but, at least, the author would adopt all sorts of devices to palliate and excuse such conduct. In France no such periphrasis is required. It is little wonder if there is a periodical recrudescence of that peculiar malady which the sub-editors of our evening papers sum up for us every now and then in the familiar headline, 'Spy Mania in France.' People would not be human did they not attribute to others, rivals or enemies, faults which they have come to look upon in themselves as mere peccadilloes.

It is quite understood that the practices of the Cabinet Noir in the Post-Office are never quite in abeyance in France. The weapon is too good a one for any Government to voluntarily relinquish, unless under extreme pressure of public opinion. To discover what your opponent's intentions are by opening and reading his letters, which he has rashly entrusted to your charge, is a chance not to be missed. During the Boulangist troubles it was an open secret that the Cabinet Noir was working night and day; and, not more than a year ago, M. Lockroy, a few weeks before he was appointed Minister of Marine, publicly complained that his correspondence was being

systematically violated. M. Goron, the late head of the Paris detective department, is even now publishing his memoirs; and in the course of them he asserts that almost every person, man or woman, of note in the French capital, and many persons of no note whatever, have their secret *dossiers* in the police archives—*dossiers* composed of all sorts of scurrilous tittle-tattle gleaned from the most suspicious sources—your door-porter, your cook, and your tradesmen's assistants—and of course open to the inspection of the powers that be for the moment. These *dossiers*, the late head of the detective department categorically declares, are often the *fons et origo* of the many mysterious ministerial shufflings that are so often inexplicable to the outside world. Blackmailing is, in fact—if M. Goron is to be believed—the very commonest offence in France to-day.

Now and again the Government makes a half-hearted attempt to deny that the practice of opening letters goes on; but nobody is deceived. Telegrams, according to the actual law of the land, are not considered private communications; and one of the duties of the prefect of each department is to look through copies of all the telegrams sent to or by persons residing in his jurisdiction, and signalise any that may strike him as suspicious to the attention of his superiors. Between reading your neighbour's telegram and reading his letter there is a very narrow margin, and it would be surprising if the margin were not often lost sight of entirely!

The institution of the Cabinet Noir is attributed to Louis XV., his principal object, apparently, being to gratify idle curiosity by prying into the private affairs of his subjects. Once instituted, it has never since been abolished. Napoleon resorted to it in order to get on the scent of political plots and crimes; but, in the few years that followed the Restoration, after Waterloo, all was fish that came to the inquisitors' nets.

'Immoral, I admit. But can you suggest any surer way of discovering the trend of public opinion?' Such was the answer of Louis XVIII. to a courtier who had ventured to call his attention to the scandalous abuses that were taking place in connection with the Post-Office. Every morning, Foudras, the Inspector-general of Police, received a bulky packet from the postal administration, containing copies of all the letters sent to or from Paris which, for one reason or another, it had been deemed advisable to open and read before sending on to their destinations. A similar duplicate packet was sent to the king. This, in itself, would have been bad enough; but the matter was made far worse by the way in which it was carried out. The clerks employed in copying the letters were always ready on a hint from their superiors to omit and even to interpolate passages in the letters, so that the copy conveyed a totally different impression to that intended by the writer of the original.

When the allied sovereigns were in Paris in 1815 they could not make a movement nor utter a word that was not immediately noted down by a spy in the pay of the police. The very detectives whom the foreign princes brought in their train were themselves, in turn, shadowed. For the next four or five years nothing that went on in the various embassies but was brought to the notice of the police. Every despatch was copied; no precaution availed aught. Within the hour the messenger who carried the despatch was bribed and the cipher read. None had more reason to complain of the surveillance to which he was subjected than Count von der Goltz, the Prussian Minister. His weekly despatches to the king and the Prussian Chancellor were in the hands of the police almost before the ink was dry on them, the principal 'observer' attached to the person of the Prussian envoy being particularly smart.

It is a strange experience to wade through the heterogeneous mass of correspondence preserved to-day in the dusty archives in Paris. The most unlikely discoveries are made. All sorts of letters are thrown together pell-mell—letters from kings and queens down to letters sent by the humblest of their subjects. Among the lot are two epistles dated from London, bearing the signature of a well-known member of Parliament of the day, and addressed to two separate ladies in Paris. The letters are couched in almost identical terms, and in each the faithless Briton assures his correspondent that he lives for her and her alone, the phraseology being as ardent and apparently as sincere as that of any Romeo. Had he foreseen that seventy years afterwards the two letters were to be read side by side by the first comer!

If the police treated the correspondence of foreigners with such scant ceremony, it may easily be imagined they displayed even fewer scruples when their own compatriots were concerned. Woe betide the unfortunate individual who fell under suspicion. Chateaubriand, from 1815 to 1820, was scarcely allowed to wink without the fact being consigned to writing. Two agents were specially told off to watch him. Nothing in his house was respected. Not merely his wastepaper-basket, but the ashes in the fireplace, and even the spittoon, were carefully overhauled several times a day. His relations with Madame Récamier troubled the police tremendously for a long time, though they finally concluded that there was nothing political underneath them. 'She writes carefully sealed-up letters to him every day; but he hides them away on his side so well that the "observers" have not yet succeeded in seeing one.' So says the report. The persecution of Chateaubriand only ceased when he was appointed ambassador to Berlin, prior to coming to London in a similar capacity.

It is instructive to read Napoleon's opinion of the Cabinet Noir as recorded in the memoirs of


General Gourgaud just published, compiled from the diary kept by the latter at St Helena. 'The Paris police inspires more fear than it does harm. There is a great deal of charlatanism in connection with it. . . . The post supplies excellent information; but I am not certain whether the good is not compensated by the evil. The French are so peculiar that they frequently write what they do not think, and, in this way, one is apt to be led into error.' *Plus ça change, plus c'est la même chose*, evidently.

For the people who consented to serve him in the capacity of spies Napoleon had the greatest disdain. Speaking of Madame de Bouillé, who acted as one of his principal policewomen, he says: 'Such people are very despicable.'

History repeats itself, and the character of a nation is not necessarily changed because the form of government is differently designated. To understand much of the extraordinary course of events in France of late, it is necessary to look a good way below the surface.

THE RED RAT'S DAUGHTER.

CHAPTER XXVI.

OW, what about the yacht?' inquired MacAndrew. 'We mustn't be caught here. It is impossible to say how soon the troops may be after us. There is a guard-house in Aniwa Bay; and they are certain to know before long that a man has escaped from Dui and is heading this way.'

'The yacht will be within signalling distance of this hut to-night at midnight,' said Browne. 'And you can see for yourself there are some rockets in that corner which I can fire. Then, within half-an-hour, she will send a boat ashore.'

'Good,' he said in a tone of approval. 'Very good. You are the sort of man I like to do business with. For my part, I shall not be sorry to get out of this.' He pointed to his disguise.

'I dare say you will not,' said Browne. 'You have succeeded wonderfully well. I cannot tell you how much obliged I am to you.'

'I am equally obliged to you,' said MacAndrew, 'so we can cry quits. I flatter myself that, all things considered, it has been a pretty good escape; but I could tell you of one or two which have been better. We mustn't shout too soon, however; we are not out of the wood yet.' As he spoke he mixed himself another glass of grog and lit a cigar, the smoke of which he puffed through his nose with the enjoyment of a man to whom such a luxury had been forbidden for some time past. Browne followed his example, and the two men smoked in silence, while the ex-Nihilist snored on the bed in the corner. Hour after hour they talked on. As Browne had suspected, MacAndrew proved the most interesting companion in the world. His life had been one long series of hairbreadth escapes; he had fought both for civilisation and against it; had sold his services to native sultans and rajahs, had penetrated into the most dangerous places, and had met the most extraordinary people. Strange to relate, with it all, he had still preserved the air of a gentleman.

'Oxford man?' asked Browne after a moment's pause, without taking his eyes off the fire, and still speaking in the same commonplace tone. The

other mentioned the name of a certain well-known college. Both felt that there was no more to be said, and they accordingly relapsed into silence.

'Rum thing this world of ours, isn't it?' said MacAndrew after a little while. 'Look at me. I started with everything in my favour; eldest son, fine old place in the country, best of society; for all I know I might have ended my days as a J.P. and member for my county. The Fates, however, were against it; in consequence I am sitting here to-night disguised as a Russian fur-trader. It's a bit of a transformation scene—isn't it? I wonder what my family would say if they could see me!'

'I wonder what some of my friends would say if they could see me?' continued Browne. 'If I'd been told a year ago that I should be doing this sort of thing I should never have believed it. We never know what's in store for us—do we? By the way, what's the time?' He consulted his watch, and discovered that it only wanted ten minutes of twelve o'clock. 'In ten minutes we'll fire the first rocket,' he said. 'It's to be hoped it's clear weather. Let us pray that there's not another vessel outside, who, seeing our signal, may put in and send a boat to discover what is the matter.'

'You're quite sure that the yacht will be there, I suppose?' said MacAndrew.

'As sure as I can be,' replied Browne. 'I told my captain to hang about at night, and to look round this coast at midnight, so that if we did signal he might be ready. Of course, there's no saying what may have turned up; but we must hope for the best. How is our friend yonder?'

MacAndrew crossed the hut and bent over the man lying on the bed. He was still sleeping.

'Poor beggar! he is quite played out,' said the other. 'It will be a long time before he will forget his tramp with me. I had to carry him the last three miles on my back, like a kiddy; and in that thick scrub it's no joke, I can assure you.'

Though Browne was quite able to agree with him, he did not give the matter much consideration. He was thinking of Katherine and of the

meeting that was shortly to take place between the father and daughter. At last, after what seemed an infinity of waiting, the hands of his watch stood at midnight. Having acquainted MacAndrew with his intention, he took up a rocket, opened the door of the hut, and went outside. To his intense relief the fog had drawn off, and the stars were shining brightly. Not a sound was to be heard save the sighing of the wind in the trees behind the hut, and the clinking of the ice on the northern side of the bay. To the southward it was all clear water, and it was there that Mason had arranged to send the boat.

'To be or not be?' said Browne as he struck the match and applied it to the rocket. There was an instant's pause, and then a tongue of fire flashed into the darkness, soaring up and up, until it broke in a myriad of coloured lights overhead. It seemed to Browne, while he waited and watched, as if the beating of his heart might be heard at least a mile away. Then suddenly, from far out at sea, came a flash of light, which told him that his signal had been observed.

'They see us,' he cried in a tone of delight. 'They are getting the boat under way by this time, I expect; and in less than an hour we shall be on board. We had better get ready as soon as possible.' With that they turned into the hut once more, and MacAndrew shook the sleeping man upon the bed.

'Wake up, little father,' he cried in Russian. 'It's time for you to say good-bye to Saghalien.'

The instantaneous obedience which had so long been a habit with him brought the man to his feet immediately. Browne, however, could see that he scarcely realised what was required of him.

'Come,' said Browne, 'it is time for us to be off. Your daughter is anxiously awaiting you.'

'Ah, to be sure—to be sure,' replied the other in French. 'My dear daughter.' Forgive me if I do not seem to realise that I shall see her so soon. Is it possible she will know me after all these long years? When last I saw her she was but a little child.'

'Her heart, however, is the same,' said Browne. 'I can assure you that she has treasured your memory as few daughters would have done. Indeed, it is to her, more than any one else, that you owe your escape. But for her endeavours you would be in Dui now. But let us be off; we are wasting our time talking here when we should be making ourselves scarce.'

'But what about these things?' said MacAndrew, pointing to the books on the table, the crockery on the shelf, and the hundred and one other things in the hut. 'What do you intend doing with them?'

'I scarcely know,' replied Browne. 'The better plan would be for us to take with us what we

can carry and leave the rest. If they are of no other use, they will at least give whoever finds them something to think about.'

'I wish him joy of his guesses,' said MacAndrew as he led the old man out of the hut.

Browne remained behind to put out the lamp. As he did so a smile passed over his face. How foolish it seemed to be taking precautions, when he would, in all human probability, never see the place again! The fire upon the hearth was burning merrily. Little by little it would grow smaller, the flames would die down, a mass of glowing embers would follow, then it would gradually grow black, and connection with the place would be done for ever and a day. Outside it was all brilliant starlight, and for this reason they were able easily to pick their way down the path towards the place where Captain Mason had promised to have the boat.

So weak was the old man, however, that it took something like half-an-hour to overcome even the short distance they had to go. He could scarcely have done as much had not MacAndrew and Browne lent him their support. At last they reached the water's edge, where, to their joy, they found the boat awaiting them.

'Is that you, Phillips?' inquired Browne.

'Yes, sir, it's me,' the third mate replied. 'Captain Mason sent us away directly your signal was sighted.'

'That's right,' said Browne. 'Now, just keep your boat steady while we help this gentleman aboard.'

The boat's crew did their best to keep her in position while MacAndrew and Browne lifted Monsieur Petrovitch in. It was a difficult business, but at last they succeeded; then, pushing her off, they started for the yacht. For some time not a word was spoken. MacAndrew had evidently his own thoughts to occupy him; Katherine's father sat in a huddled-up condition; while Browne was filled with a nervousness that he could neither explain nor dispel.

At last they reached the yacht and drew up at the foot of the accommodation-ladder. Looking up the side, Browne could see Captain Mason, Jimmy Foote, and Maas leaning over watching them. It had been previously arranged that the meeting between the father and daughter should take place in the deck-house, not on the deck itself.

'Is he strong enough to walk up?' the captain inquired of Browne. 'If not, shall I send a couple of hands down to carry him?'

'I think we can manage it between us,' said Browne; and accordingly he and MacAndrew, assisted by the mate, lifted the sick man on to the ladder, and half-dragged, half-carried him up to the deck above.

'Where is Miss Petrovitch?' Browne inquired when they reached the deck.

'In the house, sir,' the captain replied. 'We

thought she would prefer to be alone there. She knows that you have arrived.'

'In that case I will take you to her at once,' said Browne to the old man, and slipping his arm through his, he led him towards the place in question. When he pushed open the door he assisted the old man to enter; and, having done so, found himself face to face with Katherine. She was deadly pale, and was trembling violently. Madame Bernstein was also present; and, if such a thing were possible, the latter was perhaps the more agitated of the two. Indeed, Browne found his own voice failing him as he said, 'Katherine, I have brought you your father!'

There was a moment's hesitation, though what occasioned it is difficult to say. Then Katherine advanced and kissed her father. She had often pictured this moment and thought of the joy she would feel in welcoming him back to freedom. Now, however, that it had come it seemed as if she could say nothing.

'Father,' she said at last, 'thank Heaven you have escaped.' She looked at him, and as she did so Browne noticed the change that came over her face. It was as if she had found herself confronted with some one she did not expect to see. And yet she tried hard not to let the others see her surprise.

'Katherine, my daughter,' said the old man, 'do you remember me?'

'Should I be likely to forget?' said Katherine. 'Though I was such a little child when you went away, I can remember that terrible night perfectly.'

Here Madame Bernstein interposed, with tears streaming down her face. 'Stefan,' she sobbed, 'Heaven be thanked you have at last come back to us!'

Thinking it would be as well if he left them to themselves for a short time, Browne stepped out of the house on to the deck, and closed the door behind him. He found MacAndrew, Maas, and Jimmy Foote standing together near the saloon companion-ladder.

'Welcome back again,' said Jimmy, advancing with outstretched hand. 'By Jove! old man, you must have had a hard time of it. But you have succeeded in your undertaking, and that's the great thing, after all—is it not?'

'Yes, I have succeeded,' said Browne, in the tone of a man who is not quite certain whether he has or not. 'Now, the question for our consideration is what we ought to do. What do you say, MacAndrew; and you, Maas?'

'If I were in your place I would get away as soon as possible,' answered the former.

'I agree with you,' said Jimmy. 'By Jove! I do.'

'I cannot say that I do,' added Maas. 'In the first place, you must remember where you are. This is an extremely dangerous coast about here, and if anything goes wrong and your boat runs

ashore, the man you have come to rescue will be no better off than he was before. If I were in your place, Browne—and I'm sure Captain Mason will agree with me—I should postpone your departure until to-morrow morning. There's nothing like having plenty of daylight in matters of this sort.'

Browne scarcely knew what to say. He was naturally very anxious to get away; at the same time he was quite aware of the dangers of the seas in which his boat was just at that time. He accordingly went forward and argued it out with Mason, whom he found of very much the same opinion as Maas.

'We have not much to risk, sir, by waiting,' said that gentleman; 'and, as far as I can see, we've everything to gain. A very strong current sets from the northward; and, as you can see for yourself, a fog is coming up. I don't mind telling you, sir, I've no fancy for manœuvring about here in the dark.'

'Then you think it would be wiser for us to remain at anchor until daylight?' said Browne.

'If you ask me to be candid with you,' the skipper replied, 'I must say I do, sir.'

'Very good, then,' said Browne. 'In that case we will remain.' Without further discussion he made his way to the smoking-room, where he announced to those assembled there that the yacht would not get under way till morning.

'Pon my word, Browne, I think you're right,' said Maas. 'You don't want to run any risks, do you? You'll be just as safe here, if not safer, than you would be outside.'

'I'm not so sure of that,' said Jimmy; and then, for some reason not specified, a sudden silence fell upon the party.

A quarter of an hour later Browne made his way to the deck-house again. He found Katherine and her father alone together, the man fast asleep and the girl kneeling by his side.

'Dearest,' said Katherine softly as she rose and crossed the cabin to meet her lover, 'I have not thanked you yet for all you have done for—for him and for me.'

She paused towards the end of her speech, as if she scarcely knew how to express herself; and Browne, for whom her every action had some significance, was quick to notice it.

'What is the matter, dear?' he asked. 'Why do you look so sadly at me?'

She was about to answer, but she changed her mind.

'Sad?' she whispered, as if surprised. 'Why should I be sad? I should surely be the happiest girl in the world to-night.'

'But you are not,' he answered. 'I can see you're unhappy. Come, dear, tell me everything. You are grieved, I suppose, at finding your father so changed? Is not that so?'

'Partly,' she answered in a whisper; and then, for some reason of her own, she added quietly,

'but madame recognised him at once, though she had not seen him for so many years. My poor father, how much he has suffered!'

Browne condoled with her, and ultimately succeeded in inducing her to retire to her cabin, assuring her that MacAndrew and himself would in turns watch by her father's side until morning.

'How good you are!' she said, and kissed him softly. Then, with another glance at the huddled-up figure in the easy-chair, but without kissing him, as Browne had quite expected she would do, she turned and left the cabin.

It was just two o'clock, and a bitterly cold morning. Though Browne had declared that MacAndrew would share his vigil with him, he was not telling the truth, knowing that the other must be worn out after his travels of the last few days. For this reason he persuaded Jimmy to take him below, and to get him to bed at once. Then he himself returned to the deck-house, and set to work to make Katherine's father as comfortable as possible for the night.

Just after daylight Browne was awakened by a knocking at the door. He crossed and opened it. It proved to be the captain. He was plainly under the influence of intense excitement.

'I don't know how to tell you, sir,' he said. 'I assure you I would not have had it happened for worlds. I have never been so upset in my life by anything.'

'But what has happened?' inquired Browne, with a sudden sinking at his heart.

'Something has gone wrong in the engine-room,' replied the captain, 'and until it has been repaired it will be impossible for us to get under way.'

At that instant the second officer appeared, and touched the captain on the shoulder, saying something in an undertone.

'What is it?' asked Browne. 'What else is wrong?'

'He reports that a man-o-war can be just descried upon the horizon, and he thinks she is a Russian!'

(To be continued.)

COLOUR AND QUALITY.



COLOUR is perhaps the surest guide we possess to the quality of all marketable commodities, from milk to whisky, or from butter to white-lead. More than this, colour is an index of health and even of good-breeding, as witness the term 'blue-blooded' applied to the old nobility, although why blue rather than red blood should be considered aristocratic has long been a mystery to us. Our sense of smell should be quite as good or even a better guide than our sense of colour; but, probably through living in evil-smelling cities where a refined sense of smell would be distinctly inconvenient, we have lost the use of our olfactory organs to a great extent. The appreciation of colour, especially of small differences in colour, varies greatly from one individual to another; but colour-blindness is much less common than is generally supposed. Consequently, colour is used very largely in discriminating between different qualities of a particular material, and with very good reason, as we shall see. So much have colours become associated in the public mind with certain products—not necessarily coloured—that it has become necessary to colour them artificially to please the public taste. Rum in the olden days owed its rich red-brown colour to the occasional boiling over of the liquor in the crude stills of the period. Nowadays rum, as it leaves the still, is perfectly colourless; but as it would be considered a foolish joke to offer water-white rum for sale, the spirit is coloured artificially. Brandy is coloured with caramel; whisky is coloured by maturing in a sherry cask or by the addition of caramel. Vinegar used to be made

from malt, and owed its colour to the caramel in the malt, but now the greater portion of it is made by diluting pyroligneous acid and colouring with caramel; even the better-class vinegar is made largely from damaged rice and other grain, with a little malt introduced just to swear by, and the whole coloured with caramel. Londoners have got so into the habit of drinking poor milk coloured with anatta, containing an extra dose for the product of the cow 'specially kept for invalids and nurseries,' that they refuse to regard the natural uncoloured lacteal fluid as genuine.

The only practical instrument devised for measuring colour is the ingenious tintometer of Mr J. W. Lovibond, a short description of which appeared in *Chambers's Journal* for February 1896. In this instrument the colour of a substance or liquid is matched against standard-coloured glasses, which are graduated from colourless glass up to the strongest tone that can be graded accurately. Three series—namely, a red, a yellow, and a blue—have been found sufficient for all purposes. The system is very logical—equal tones of the red, yellow, and blue standards giving neutral gray; equal combinations of red and yellow produce orange; yellow and blue produce green; and blue and red produce violet—so that by means of the three series of standards any colour can be matched and recorded.

Since our last article was written, Mr Lovibond has applied his discovery of colour-curves to the examination of a number of substances with very interesting results. Naturally enough his own industry of brewing has taken up a large share of attention, and it has been found that not only can

the colour-producing properties of a malt—so important a factor in making pale ales—be gauged to a nicety, but the actual behaviour of the malt in brewing, and the keeping properties of the beer made from it, can be foretold with certainty. The secrets of the malt that has been overheated and quenched with cold water, and of the malt that has been unevenly dried and faked, all come out in the colour-curves. Chemical analysis even is unable to detect the differences between malts that the delicacy of the colour-curve will render visible. It is possible by means of the curves to tell whether a whisky has been matured in a sherry cask or has been coloured by caramel. The method has been applied to caramel itself, and it has been found that the yellow colour is the important constituent, not the blackness.

Dr George Oliver has applied the system to the measurement of the red colouring matter of blood, and gave a full account of the method, which is now in use at most of the hospitals and universities, in the Croonian Lectures before the Royal College of Physicians of London last year. It is this red colouring matter that conveys the oxygen from the lungs to wherever it is required in the body, and the general health depends largely on the presence of the correct amount of this material in the blood. An excess generally indicates gout, whilst a deficiency causes the disease known as anaemia, so common amongst young women. It is painful to look down the scale of the curve and see what a pitiful condition it is possible to be reduced to by anaemia. So delicate is the method that the variations in the blood between breakfast and bedtime can be traced quite easily. During the day a continual destruction of the red corpuscles is going on, and this deficit is made up during sleep. Amongst other interesting things, Dr Oliver found that he and a companion who assisted him were as healthy in London as they were in Switzerland, taking the state of the blood as a criterion. His experiments were made twice a day for a considerable length of time, and the condition of his blood improved

steadily the whole time, from which it would appear that a little systematic blood-letting is good for the constitution.

Another service the tintometer seems likely to do to the medical and other professions is to attach definite names to definite colours, by means of a little interchangeable set of standards; so that when an individual says that a particular substance was blue-green, every one interested in the matter will know what he means. At present definitions of colours are most vague and heterogeneous. What one person calls red another terms scarlet; what one calls violet another calls blue; and so on. We frequently hear a colour described as being, for instance, a 'dirty-greenish' or 'bluish-white,' which is quite meaningless. The use of the tintometer standards is the only available method for conveying a conception of colour from one individual to another.

Many fresh applications for the tintometer have arisen during the last two years. The London County Council, the Liverpool Corporation, and the Massachusetts Board of Health use the instrument for controlling and registering the state of the rivers and the water-supply. The colours of our postage-stamps are kept to a constant standard by means of the tintometer, and it seems likely to be used by philatelists for fixing standards of colour for different issues of stamps. The value of rosin depends on its paleness, and the tintometer is being substituted for the old standards, which soon became useless through fading. Tanners are using it for checking the value of their extracts; papermakers, book-binders, and others for keeping the colours of their materials constant. The instrument is employed in several kinds of scientific and industrial research, for it is found that colour and quality go hand-in-hand, the colour-curve of a substance being as characteristic of it as its physical structure. It is seldom that what was in the first instance a rich man's hobby conquers such a wide field of industrial and scientific usefulness as has been won by the tintometer.

FROM MAJUBA TO OMDURMAN.

By T. B. TOWNSHEND.

TO learn from your enemies is a maxim which has lost none of its force down to the present day; and it interests every one amongst us to know whether the British army is in the hands of men who are capable of profiting by the lessons that from time to time are rudely administered to us by our foes. Most of us remember only too well the short-lived English domination in the Transvaal during the later part of the seventies, as well as the way in which misfortune seemed to dog the steps of those on whose shoulders fell the burden

of upholding it there. We had found the country in a bankrupt condition, and had restored its finances; we had found it threatened by the formidable Zulu monarch, with his army of fifty thousand fighting savages, thoroughly drilled and in a state of high military efficiency. After a desperate struggle, in which we suffered some very severe losses, including the battle of Isandula, where our camp was taken and the whole of its defenders slaughtered, the British arms finally achieved a complete but hard-won triumph. We had broken the power of Cetewayo, and dispersed his regiments of 'celibate, man-destroying gladi-

ators,' to use the phrase in which Sir Bartle Frere once described his justly-dreaded impis. Subsequently, in the Transvaal itself, we had overthrown Secocoeni, a powerful native chief who had successfully defied the Boer Government; while enterprising British traders had supplied an abundance of excellent sporting rifles to the people of the country, who earned not a little money by shooting down the game with them. In brief, we had removed one by one every obstacle to a revolt on the part of the emigrant farmers, who made up the bulk of the population of the Transvaal outside the towns.

The revolt followed, as might have been expected. It broke out in the month of December 1880, during the warm summer of the southern hemisphere, and it came to an end with the peace that was concluded after the disastrous battle of Majuba Mountain on February 26, 1881. The tale of misfortune begins with the affair of Bronkerspruit in December. The 94th Regiment, forming a part of the British garrison of the Transvaal, had been ordered to concentrate at Pretoria, and was on the march thither. No actual fighting had as yet taken place; but the Boers had held a mass meeting, proclaimed a republic, and announced that they were going to begin. At Bronkerspruit they laid a carefully prepared ambush along the road by which the 94th were advancing, and awaited their victims. The British colonel had been warned to look out for traps; but, as far as can now be known, he had no idea that these sharp-shooting farmers were really in earnest, and he failed to profit by the warning. The 94th were strung out for half a mile along the road; the weather was hot, and many of the soldiers had put their rifles in the wagons; in short, the march was conducted as if in a time of profound peace. At a certain spot the long column was halted by a Boer patrol. There was a brief colloquy between the colonel and the Boers; they ordered him to go back, and he refused. Nobody seems to have noticed the ambushed riflemen, or to have observed the little heaps of stones with which these skilled hunters of wild game, old hands at shooting over the bare veldt, had thoughtfully marked out beforehand at one hundred, one hundred and fifty, and two hundred yards, their exact distance from their intended targets. The Boer rifles cracked, and in twenty minutes all the officers and half the British troops were shot down, and the rest were made prisoners; the loss on the side of the farmers was almost nil. As a Western American crudely observed, it was a case of a lot of first-class frontiersmen taking in a crowd of tenderfoot out of the wet. It was a terribly severe lesson that in the face of a possible enemy a soldier must never be off his guard.

After the Bronkerspruit disaster the whole country was up. All the British garrisons in the

Transvaal were beleaguered by the Boers; and one garrison, Potchefstroom, was known both by them and by Sir George Pomeroy Colley, the general in command in Natal, to be short of provisions. Colley gallantly determined to cut his way in, if possible, and relieve it. He knew well enough that ere long an army from overseas must be sent to retrieve the honour of the British arms; but he was also aware that it must inevitably arrive too late to save Potchefstroom. The Boers had occupied Laing's Nek, the pass leading into the Transvaal from Natal; and, with the small British force he had at his command, he hoped to be able to dislodge them and clear the road. General Colley was considered to be one of the very best officers in the British army. He had had some experience of actual fighting in China, and he had exhibited extraordinary skill and courage and resource in the very difficult task of organising the transport in the Ashanti campaign. He certainly could not be called a novice in war. But unfortunately there was one thing of which all his previous experience had taught him nothing, and that was how to fight against good shots armed with modern breech-loaders.

On January 28, 1881, Colley moved upon Laing's Nek with about eleven hundred men and six guns. The force of Boers opposed to him is said by Alfred Aylward, who appears to have acted as their military secretary, to have numbered fourteen hundred and thirty-seven, under Generals Joubert and Smidt. The Boers had no guns, and dreaded artillery fire more than anything else; accordingly, they dug some dummy trenches in soft ground on a conspicuous part of the Nek, and then judiciously disposed themselves in safety elsewhere. Colley's guns opened fire at a mile and a half, and appear to have principally occupied themselves in shelling the empty trenches, as, according to Alfred Aylward, no one was hurt or even frightened by the cannonade. It may be noted that Alfred Aylward's figures are not contradicted by Sir William Butler in the *Life of Sir George Colley* which he has recently published; and, indeed, with reference to this particular action, General Colley himself deprecates the ineffectiveness of his artillery practice in one of the letters printed by his biographer.

Posting the naval brigade, with the rocket apparatus and some of the 60th Rifles, in an enclosed ground, where they were under cover, and keeping about half his force in reserve, Colley despatched five companies of the 58th Regiment, numbering four hundred and eighty bayonets, together with about a hundred mounted men, to assault the left of the Boer lines. In broad daylight, the foot advanced in column of companies across the open ground and up the hill, against nearly thrice their own number of the best shots in the world, who were under cover and armed with good modern rifles. The charge of the Dervish host at Omdurman was not

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so gallant or so futile. In a few minutes the handful of mounted men were scattered, and one-third of the 58th lay dead or wounded on that bloody slope. The survivors drew off, re-formed their shattered lines behind the 60th Rifles, and retired in good order. The Boer loss is said to have been two. It was magnificent, but it was not war. It proved, if any proof were needed, that for infantry in column to charge in broad daylight works thus strongly held by resolute men who can handle breech-loaders is to court ruin and disaster.

After Laing's Nek the exultant Boers threatened Colley's communications, and on 8th February he sallied out from his camp at Mount Prospect to clear the road in his rear. This time he took with him five companies of the 60th Rifles—who, being in reserve, had not been cut up at Laing's Nek—and four guns, together with thirty-eight mounted men. A few miles from camp he left a half-company and two guns to guard the drifts of the flooded Ingogo River, and a mile or two farther on he encountered a strong party of Boers. With a confidence begotten of their easy victory at Laing's Nek, the Boers did not wait to be attacked, but, without hesitation, assumed the offensive. Colley took up a position on a flat-topped hill, and stood on his defence, having now about three hundred men and two guns with him. According to Alfred Aylward, the Boer patrol numbered one hundred and sixty-seven. The Boers took cover all round the hill, and a prolonged rifle duel ensued between the two forces. Avoiding the British tactics at Laing's Nek, the conditions of which were exactly reversed upon this occasion, the Boers refrained from any attempt to take the hill by direct assault in a body; but as independent sharpshooters they kept up an incessant rifle fire until near nightfall. In accuracy of shooting, and in the skill with which they sheltered themselves, they proved to be superior to the defenders of the hill. They drew off at last with a loss of twelve killed and fourteen wounded; but the defenders had actually lost six times as many. The sharp-shooting skirmishers had put no less than half the force they were attacking *hors de combat*. After the withdrawal of the Boers, Colley, whose horses were nearly all killed, with great difficulty succeeded in saving the guns, dotted all over as they were with the splashes of the Boer bullets; and, by a desperate night-march, he regained his camp under cover of darkness with the remnant of his forces. England had to learn by bitter experience that valour without good shooting is but a waste of the lives of her bravest sons. The spirit and staunchness of the British troops were admirable; and Colley's own letters warmly acknowledge the fact. But as shots they were completely outclassed.

Reinforcements now began to arrive. Colley's force at the front, which had suffered so heavily

in these two engagements, was strengthened by the arrival of the 92d Highlanders, fresh from their victories in Afghanistan; and with them he resumed the offensive. This time he decided to avoid making a direct attempt on Laing's Nek, and aimed at turning that position by occupying the Majuba Mountain, which overhung the pass on the south-west. After Laing's Nek, Colley had promised the survivors of the 58th to give them another chance of trying conclusions with their opponents; and to seize Majuba he took with him a force composed of three companies of the 92d, two of the 58th, and two of the 60th, supplemented as before by a naval contingent. By a skilful and daring march, on the night of 25th February, he occupied, without opposition, this post of vantage, which appeared to him impregnable. 'We could stay here for ever,' he remarked to his chief of staff when daylight revealed the nature of the ground on which they stood; and he sat down in fancied security to hold it till further reinforcements should arrive, intending then to make with their aid a combined movement against the Nek. But, unfortunately for Colley, the position he had seized was not so strong as he had imagined. The Majuba Mountain was what Western Americans would call a belted *mesa*: it was a flat-topped, or rather a saucer-topped height, with a belt of perpendicular cliff running round it a little below the summit, broken only here and there by a few gullies, through which access to the summit might be gained from the lower slopes. These lower slopes were steep, and the upper parts of them were screened from view from the summit by being below the belt of cliff which looked so formidable to the eye. Technically speaking, they were 'dead' ground.

In his fancied security, Colley omitted to fortify his position, the very error which two years before had led to the disaster of Isandula. He allowed his staff to distribute most of his men around the rim of the saucer-shaped basin, where they contented themselves with piling up little heaps of stones to lie down behind. 'Oh, it's all right, sir; it's good enough for what we shall want up here,' said a Highlander confidently to an observer who suggested that such a protection was hardly sufficient; and against a distant enemy perhaps the man was right. The idea of the Boers even attempting to take such a position by storm appeared preposterous.

Alas! it was not so preposterous as it seemed. As soon as daylight revealed to the force holding Laing's Nek that their flank was threatened, they began indeed to prepare to send their wagons to the rear; but they determined also before retreating to try the effect of a direct assault upon Majuba. According to the account given by General Sir William Butler, some of the Highlanders showed themselves boldly on the sky-line in the morning light, shaking their fists defiantly

at the hostile camp, which lay two thousand feet below, and of which they could now see every detail. 'Come up here, you beggars,' they cried; and if Alfred Aylward may be trusted, two hundred and twenty-three Boers accepted the invitation. Part of the Boer assailants took cover at once with their usual skill, and opened a long-range fire on the summit of Majuba. This fire did but little execution, though a single shot at nine hundred yards mortally wounded the brave Romilly, commander of the naval contingent. But, generally speaking, the defenders of the hill took good care not to expose themselves unnecessarily to the marksmanship of the Boers, with the result that the actual loss inflicted by the long-range fire was small. Though the Boers kept it up incessantly all that long summer's morning, scarcely any one except poor Romilly was touched.

Nevertheless, the Boers were not throwing away their powder for nothing. They succeeded in their object of compelling the defenders of the hill to keep closely under shelter, and prevented them from observing what happened on the slopes below the encircling girdle of cliff. Protected thus by the fire of their companions, small parties of Boers were creeping as stealthily as deer-stalkers over wide spaces of the mountain-side where the cliff wall above screened them both from the sight and from the fire of the defenders. Sir William Butler gives an excellent map, shaded so as to exhibit clearly the 'dead' portions of the hillside across which these experienced hunters made their way unobserved. So stealthy and so cautious were they that they took the whole morning over their stalk; but their caution and skill were crowned with perfect success. At one part of the circumference of Majuba there is a little outlying *kopje*, or peak, which is really the key of the position. With unerring instinct one of the Boer leaders made for this point. According to Sir William Butler, he had about sixty men with him; and when he arrived quite near it, with his party still undiscovered, he detected a picket of several soldiers, who were standing in an exposed position, unconscious of the near neighbourhood of their foes. The Boer leader ordered a number of his men to hold their rifles at the 'present,' step back out of cover, and fire a rapid volley. The manœuvre was skilfully executed; the whole picket was clean swept away, and in a few minutes more the Boers had got the key of the position in their hands. By this success they had turned the left of the British troops, who were holding the northern face of the rim, and took them in the flank. The troops, thus suddenly surprised, fell back from the rim, and immediately other parties of Boers rushed up by another gap, and seized the abandoned positions. Practically, Majuba was taken by surprise. Till the enemy were actually on the top the general and his staff never dreamed that they could lose the hill. But, once established on the

summit, the rapid and accurate fire of the Boers swept away the defenders. It seems as if no provision had been made for the unexpected contingency of the hill being stormed; no second line of defence had been provided, and such reserves as existed were either not ready or could not be got into place at the critical moment; and a general *saute qui peut* followed. It is a scene that one does not care to think about. Colley, endeavouring to rally his broken lines, despairingly fronted the hailstorm of bullets that mowed down his men, and fell with his face to the foe. Nearly half the British force were killed, wounded, or made prisoners. The Boer losses are given by Sir William Butler at six, of whom only one was killed. Here indeed was a lesson to every commander to secure his weak point. Like every other post of vantage, Majuba Hill had its vulnerable spot, and that spot was neither sufficiently fortified nor guarded.

There is one other matter that should be mentioned. The absurdly small loss inflicted on the men who stormed Majuba would be incredible but for one reason. It has been already observed that the fire which covered the stealthy advance of the stormers was all at long range. The British soldiers replying to it fired also at the same range; nor need we be surprised that, against an enemy so skilled in selecting sheltered positions, their fire did not effect much. But, as it was a long-range duel, they were of course compelled to raise their sights, with the result that when they were suddenly rushed by the Boer storming-parties they all had the sights of their Martinis set to five and six hundred yards elevation; but the stormers were at point-blank distance. Consequently, the volleys fired at close quarters by the defenders of the hill went harmlessly over the heads of their assailants. Proof of this was found in the hundreds of rifles picked up by the victors after the action was over, all of which, by their account, had the long-range sights raised. So we may add yet another lesson, and that is the necessity of perfect fire-control on the part of the officer immediately in charge of the firing line. The best-aimed volleys fired without strict attention to the regulation of the sighting are only too likely to waste themselves in empty air.

With Majuba hostilities came to a standstill. That well-equipped army, indeed, for which Colley had hoped arrived in South Africa after his fall; but it was not allowed to retrieve the tarnished glory of the British arms. For good or for evil, a peace was made, which doubtless seemed to be honourable and satisfactory to those who were responsible for it, believing as they did that to continue the war would involve us in the sin of blood-guiltiness. However, the remote consequences of our actions are often far other than we expect; and the many and bloody battles we have fought since then in Egypt and the Soudan,

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down to the recent reconquest of Khartoum, may be traced to the loss of prestige that unquestionably followed the disasters in South Africa. The belief that the power of England might be defied with impunity emboldened Arabi Pasha to head a military revolt against our *protégé*, the Khedive, at Cairo. He was woefully undeceived by the crushing British victory at Tel-el-Kebir in 1882, the very next year after Majuba. The lessons taught in South Africa had been laid to heart. True, at Tel-el-Kebir works held by riflemen were assaulted by infantry in front; but the infantry were brought close up to their objective under cover of night; and it was known that the Arabists were no such marksmen as the Boers. And now it was the Arabist rifles that were picked up in hundreds after the victory, sighted for an idle long-range fire by the express orders of their leader; while it was a British regiment that attacked in rushes, halting every fifty yards to fire volleys at a stated range fixed by their musketry instructor. One dare not say that the mistakes made in South Africa will never be repeated. To err is human; and we have high

authority for saying that he is the best general who makes fewest blunders. But it becomes possible to look forward hopefully to the future if our leaders show that they do not despise the lessons of experience. The late campaign in the Soudan would seem to indicate that these have at last been laid to heart, and the result has been in gratifying contrast to the failures of 1881. Failures they were, and the fact must be acknowledged; yet in speaking of them we would guard ourselves from using any language that may seem to reflect upon the devoted men who on field after field have laid down their lives in the service of their country. As the thought of the lonely graves that mark their last resting-place rises before the mind, one seems to behold the pallid line of ghosts, the victims of the war-god:

Slowly comes a shadowy train,
Souls of warriors brave in vain.

It was not all in vain that they fought and fell, if those who come after them have striven, under happier auspices, to surpass them in skill and not to fall short of them in valour.

THE LOATHLY SAURIAN.

By JOHN MACKIE, Author of *They that Sit in Darkness*, &c.



EXT to the ravages of the wild blacks amongst my horseflesh, I have suffered most from alligators; and there is nothing that lives I more loathe and stand in fear of than those horrible saurians. A six years' close and unbroken acquaintance with them has in no way overcome my prejudice—indeed, the reverse. They not only cost me yearly many pounds sterling in horseflesh, but they were a continual menace to my own personal safety. The following is perhaps the closest call I ever had with those truly diabolical creatures.

It was on the south-western coast of the Gulf of Carpentaria, in the northern territory of South Australia, and I had settled on the Calvert River, at the crossing where the salt water meets the fresh. I was the first and only settler in that part of the country, the principal features of which were cannibal blacks in the bush and ranges, large mobs of wild horses in the neighbourhood of the salt-pans near the sea, and no end of voracious, cunning alligators in the rivers and still, deep arms that opened out from them. One could be more or less on the lookout for blacks, and know how to deal with them; but as for the alligators, their untiring patience, and the diabolic ingenuity which, in combination with their great strength, they brought to bear upon the accomplishment of their fell designs was something that could not always be guarded against. Nearly all the great rivers flowing into the Gulf, notably

the Norman, Albert, Calvert, Robinson, and Roper, are infested with those scourges, and many and wonderful are the legends and stories told by old-timers concerning them. Alligators, as most people know, live to a patriarchal age. There was one gigantic old fellow that haunted the Albert River close to Burketown; he was there when Landsborough, the explorer, first opened up the Gulf in the early sixties, and even then his prowess and terrible deeds were historical, and had been handed down among the myall or wild blacks for many generations. When I went there to assist in the resurrection of Burketown in 1883—the township had lain desolated for years by reason of the plague—Big Ben, as he was then called, was currently reported to be some twenty-five feet in length, and of proportionate girth; but alligators, like sharks, lose nothing by hearsay. When I was there he coolly picked a gin and a black fellow off the river-bank when engaged in fishing; and though a policeman, who was a noted alligator-hunter, tried time and again to get a shot at him, Big Ben was too experienced a hand to be caught by any of his wiles—generally a dog or a goat—having 'been there before.' I saw him once as he floated down-stream like an immense partially submerged log; and he haunts Burketown to this day for all I know to the contrary. But to my particular alligator story.

When I settled on the Calvert early in 1885, what with the wild blacks and the alligators, my

time was pretty fully occupied in keeping an eye upon my horses. Before I fenced it off, my horses used to go down to the crossing to drink, and on several occasions they came back most horribly scarred. At night and when the tide was high were the most dangerous times for the depredations of the reptiles. Their modes of procedure were ingenious. They would lie in deep water close to the spot where cattle and horses or marsupials were in the habit of coming to drink, and then, shooting up silently and swiftly, catch their victim in cruel, jagged, powerful jaws, and drag it below water. Or they would lie alongside some footpath leading through the reeds, taking advantage of their resemblance to a log, and then, when their unsuspecting prey was alongside, either grapple with it boldly or hit it a stunning blow with their tails. On calm nights I have often lain awake listening to their strange, hollow, tremulous bellow; it was a weird, horrible sound. On fording rivers on horseback at the various crossings on the lonely Port Darwin track, when the tides were not high enough to make swimming necessary I used to throw my legs forward over the horse's neck, and with my rifle in my hand keep a pretty sharp lookout on either side alternately.

My ketch had been round to the Norman for supplies, and lay some three or four miles down the river; for the wet season had come on suddenly, and the Calvert had come down in flood, thus preventing the boat from getting up. I had run out of sugar, so, taking my saddle-horse and a pack-horse, had gone down to where it lay to fetch up what I wanted. It was the first week in January, and the day was very hot, the thermometer registering about one hundred and twenty-five degrees in the shade. I had slung two fifty-pound mats of sugar on either side of the pack, and was making my way back again from the boat to my place. As usual, I led the pack-horse by means of a halter-shank on the off-side. Having delayed rather long at the boat, I knew that in consequence my horses were in want of a drink, for on account of the high banks it had been impossible to water them. I was about a mile below the crossing, just above a great, broad, deep reach, which I knew to be one of the worst spots for alligators in the river, when suddenly my horses quickened their pace. For the moment I could not account for this unexpected display of zeal; but I very soon found out, to my cost, what it meant. Some sixty yards ahead the bank sloped gently down to the water's edge, and at any other time of the year there was a broad pebbly shallow just at this point, where the horses were in the habit of drinking when they strayed down the river. It may be interesting to a good many to mention that I have noticed a great difference between the forethought of a horse and a dog; while the former seems to apprehend danger but little, and will often rush unthinkingly

into it, a dog generally exercises much the same caution as a human being. I have often seen a dog, though very thirsty, scrape a hole in the sand a few feet back from the water's edge, so as to let the water run in slowly, and permit of its drinking in safety, when alligators seemed to be about.

At first I took little heed of the intentions of my horses, as I did not intend letting them drink there, seeing the water had risen several feet, and they would inevitably be carried off their feet and down the river into what I had named Alligator Pool. But I found it no such easy matter to balk their design as I had imagined. My pack-horse quickened its pace to a jog, and headed right for the treacherous bank. As it had only a green-hide halter on its head, I had but little power over it, with the result that I was literally dragged along. What was more awkward still, the horse I rode seemed to have got the bit in its teeth, and was determined on aiding and abetting its companion. Do my very utmost, I could not stop their insane onward course. In another minute they had plunged into the water, and, as I expected, were instantly out of their depth. At first I resolved, if possible, to remain seated in the saddle and pilot them safely to the other side. I had swum dozens of flooded rivers before, and was no novice at the job. But the current was strong, the pack-horse nervous, and I realised that there was danger of the latter colliding with my horse, and thus bringing about a catastrophe. Moreover, we were being carried downstream. In another moment I had flung the loose halter-shank from me, and let the pack-horse head for the opposite bank. Then I slipped off the saddle on the off or up-stream side, and, twisting a lock of my horse's mane round the fingers of my left hand, got ready to swim, and endeavoured to guide my steed to the other side. Now, it may be mentioned that it is as well to leave the reins alone when in the water; to bear on the bit only seems to bewilder the animal, and causes it to rear and lash out with its forefeet. The best way to guide is by pressure of the hand or by splashing water against the face of the horse in the required direction. When it is heading properly some men catch hold of the tail and are towed ashore. I have found this way answer well on occasions; there is at least not much danger of interfering with the action of the animal. My horse by this time had been carried into Alligator Pool; but I noted with satisfaction that the opposite shore was not more than fifty yards distant. I hoped that, owing to the discoloured condition of the water, and the swish of it as it eddied amongst the undergrowth, the alligators would not discover our presence. I kept a wary lookout, for I knew there would be little chance for me if once attacked.

Then, all at once, my heart seemed to leap into my mouth, and I knew that my worst fears

were about to be realised. My horse had stopped swimming, and, with a wild snort of fear, assumed a perpendicular position, lashing out wildly with its forefeet. At the same instant I saw, only a few yards in front of me, the ugly brown gnarled snout of an alligator poked above the swirling surface. It was doubtless at the moment as much taken by surprise as my horse. As best I could I put the latter between me and it, and, as luck would have it, I did not do so a moment too soon. The horse was beginning to spin round as horses will do when they lose their heads, and in another minute I would be right in front of that alligator again, for I knew it had only disappeared in order to make a rush in upon us. Then there was a shock as, like a battering-ram, the alligator came full tilt against the off shoulder of poor Prince; its great jaws gripped it by the fleshy part of the neck. With something like a horrible scream, the poor brute managed to release itself from that cruel, horrible grip, and lashed blindly out. I heard a quick, firm thud as a powerful hoof beat down on the horny skull of the saurian; but an alligator's head-covering is one of the toughest things in nature, and therefore it probably only served to spur the ferocity of the reptile. The latter got inside its victim's guard again, and this time it fairly caught the horse by the throat and clawed it with its short, powerful fore-arms or legs—whichever is the proper term—endeavouring to drag it down below the surface. The commotion was something terrible; the blood poured in torrents from the horse's wounds, and it was sure to attract more of those cruel reptiles. I could do nothing to assist my horse. I knew only too well it was doomed; so, throwing myself on my back, I pushed off from it, then turning on my side, swam for the shore

with powerful side-strokes. Every moment I expected to be dragged down into that horrible hole. At last, with a feeling of inexpressible relief, I reached the bank, and catching hold of some boughs, drew myself up. I looked around to where my poor Prince had been struggling with his assailant; but all I could see was the cantle of the saddle and part of the neck and floating mane. The alligator was gradually dragging him down; in another moment part of the body came to the surface quivering, and then with a sudden plunge it disappeared. It was a horrible, sickening sight! There was a great red streak stretching away down the river—the life-blood of poor Prince. Oh, how I vowed vengeance on those alligators!

I ran to where my pack-horse was trying to effect a landing; but the bank was treacherous, and every time it essayed to spring up, the loose turf would give way, and it fell back into the river. If it remained there the alligators would assuredly soon make short work of it. I was determined the brutes should not have it too; and, with a foolhardiness that afterwards considerably astonished even myself, I jumped in alongside of the pack-horse, caught it by the mane, and guided it down-stream to where there seemed to be a better landing. In a few minutes we touched bottom and scrambled ashore—I am sure none too soon. When I think of it now, it was an extraordinary piece of luck that we were not both seized by the alligators; but perhaps most of them were by this time assisting in the partition of my poor saddle-horse. I led the pack up the river, and managed to recross in safety.

When the floods subsided I watched that fatal pool for days and weeks, and managed to shoot two of its loathsome denizens.

THE MONTH: SCIENCE AND ARTS.

WIRELESS TELEGRAPHY.



Y the aid of Signor Marconi's apparatus, telegraphic messages have been lately exchanged between France and England, the two spots chosen for the experiment being thirty-two miles apart. The correspondence between the two places has been carried on with ease and certainty, although there was no communicating wire between them. This achievement is still more remarkable when it is found that neither wind, rain, fog, nor other meteorological conditions affect the results in the slightest degree. It is also noteworthy that the new method of signalling across space costs very little when compared with the heavy expense of constructing and laying a cable. The system, now quite in its infancy, will probably prove of enormous importance as a

means of communication between ships and shore, as well as between passing ships at sea, and is doubtless destined to be the means of saving many from the peril of shipwreck. It is not yet known how far the method will be operative; but experiments are to be conducted between London and Paris—the Eiffel Tower in the latter city offering a favourable altitude for the accommodation of the apparatus. Enthusiasts are suggesting that some day communication may be possible by means of the Marconi method between the earth and her nearest neighbours in space.

HER MAJESTY'S PIGEON MESSENGERS.

Although our country was at one time behind Continental nations in employing pigeons as war messengers, three years' good work has placed in the hands of the British Naval Intelligence Department an army of birds which is as well trained

and reliable as any to be found in the world. At this moment there are available about one thousand pigeons which are able to fly from ten to one hundred and fifty miles over land or water. There are three principal stations where the birds are carefully bred and educated—namely, at Gosport, Devonport, and Sheerness. Each bird has an aluminium ring on one leg, bearing its official number, a reference to which in the carefully kept records of the department will at once show the bird's capabilities and performances. The trials are carried out with the greatest care, the distance which a bird is required to fly being gradually increased. Its arrival at its home is announced by an automatic electric bell, which rings directly the pigeon steps on the arrival platform. The message—on a piece of paper which measures about four inches by one and a half—is rolled round the bird's leg, and secured by an india-rubber band. In case of need, quite a long despatch could be thus sent by photographing the original document on a roll of flexible celluloid.

IDENTIFICATION BY THUMB-MARK.

It seems an astonishing thing that the natural signature, the impression of the thumb or finger-tip, is not used to a greater extent than it is for purposes of identification. If the thumb be lightly pressed upon a surface smeared with printing-ink, and then pressed upon clean paper, an impression is obtained which is distinctive for the particular individual who owns the member. No two thumbs or fingers are alike in the arrangement of their multitudinous lines; each, therefore, is a seal which is unique, and a seal which cannot readily be mislaid or lost. The French police use this test to assure themselves of the identity of a prisoner; but surely the system could be usefully extended. A newspaper correspondent who recently pleaded for such an extension of the thumb-mark test stated that once when abroad he was in great straits for money, although he held cheques for a considerable amount, simply because he could not prove his identity. If the local banker had only had an impression of his finger-tip, as well as authority to pay, all difficulty would at once have vanished.

THE METRIC SYSTEM.

The advocates of the metric system are once again clamouring for a radical change in our system of weights and measures; and they urge their claims with such plausibility that the ordinary individual is puzzled as to whether the present system should hold good, or whether the reformers should have their way. The demand for the introduction of the metric system is nothing new, the subject having been brought before the British Parliament seventy-five years ago. Since that time various committees have been appointed to report upon the matter; bills

have been brought forward and rejected, and various societies have been established to help in the work of reform. But, with all this machinery at work, nothing has been achieved, save that in scientific work the metric system has been found convenient, and has been generally adopted. That there are cogent reasons against the general use of the French system is pretty evident from the facts mentioned, and our old methods of weighing and measuring—although they are open to many objections—are likely to be continued for some time to come. In the meantime it would be very desirable to make more common a practice pursued by certain writers in dealing with figures, and that is to put side by side with the British measures their equivalents according to the metric system. This is a matter of urgent necessity in the case of trade catalogues which are intended to circulate abroad.

STEREOSCOPIC PROJECTION.

The beautiful instrument invented by Brewster, which, by the combination of two photographs taken from slightly different points of view, gives the observer the impression that he is looking at a solid thing, was once considered an almost indispensable adjunct to the drawing-room. There have been many attempts to produce the same effects upon a lantern screen, so that the exhibition can be appreciated by a number of spectators instead of by the individual. These generally have depended upon the use of two lanterns, while, by some device or other, the pictures superposed upon the screen are combined upon the retina of the eye. As an easily understood example of how this can be brought about, we may refer to one method by which a green and a red image are thrown together upon the screen, and viewed through a pair of spectacles having a red and green glass. Mr J. H. Knight, of Barfield, Farnham, Surrey, has lately exhibited at the Camera Club (London) a very effective method of stereoscopic projection, which employs one lantern only, and which, by the help of a very simple and cheap piece of apparatus, brings a very beautiful application of photography within the reach of the painstaking amateur. The two images are thrown side by side upon the screen, and combined on the retina by the use of an adjustable mirror held in the hand.

BURGLAR ALARMS.

In the report of a recent burglary on the outskirts of London, in which the thieves carried off several hundred pounds' worth of jewellery from a shop without arousing the manager, who slept on the premises, it was stated that after the robbers had opened and closed the outer sliding-door of steel, their first task was the delicate one of removing all the burglar alarms from the premises. This done, they had no difficulty in selecting and getting clear away with their

valuable booty. We do not know the nature of these alarms, which offered such facilities to those against whom they were designed to act; but they must have been of very primitive construction, if not actually faulty in design. A novel form of burglar alarm has recently been patented by Mr A. D. Risley, of Richfield Spa, New York, which seems to promise efficiency, without being in the least obtrusive. It takes the form of an elastic matting, which can be placed beneath carpet or door-mat without attracting any more notice than the thick felt or paper which is usually placed in such situations. Its construction is such that pressure in any part will bring metallic connections into contact, and a bell will thereupon ring at any predetermined spot. It is certain that pieces of this matting placed beneath the carpet near windows and doors likely to be opened by burglars would most effectually warn a householder that such unwelcome guests were paying him a visit.

GOOD COFFEE.

It is the exception and not the rule in this country to meet with a really good cup of coffee, even at the best hotels; and so much is this the case that would-be coffee-drinkers order tea in preference to the turbid mixture which is offered to them as 'Mocha.' It is difficult to ascertain where the failure of British coffee-makers occurs, and whether it is in the article itself or in its cooking. The French, who are famed for delicious coffee, boil it, and use a large quantity of milk in the process. A new invention, of American origin, is known as Humphrey's Percolator Package for making coffee; and possibly this contrivance may bring better success to those who wish to obtain a palatable breakfast beverage. The percolator consists of a muslin oblong bag, weighted at the end. It is filled with freshly-roasted and freshly-ground coffee, and put into a vessel of water, which is allowed to boil. The bag assumes different positions owing to the movement of the water, and a decoction of coffee which is quite free from grounds is the result. The contrivance is so simple that it can readily be made by any one with the aid of a needle and thread.

GAS EXPLOSIONS.

Explosions of gas in private houses are, unfortunately, very common occurrences, and could nearly always be avoided by the exercise of a little care. It is only occasionally that we hear of an escape of gas being due to some ignorant person blowing out the flame instead of turning off the gas at the tap; for, except in a few remote places, gas and its ways are familiar to all. It is this familiarity which breeds the proverbial carelessness and callousness which prompts people to seek an escape of gas with a light. In nine cases out of ten the escape is due to the telescopic fitting of a gas-alier becoming

dry. This is obviated by the addition to the water with which the fitting is charged of a few drops of sweet oil or paraffin, which forms a layer on the surface and stops evaporation. If this precaution were commonly adopted the number of gas explosions would be sensibly decreased.

RATTLESNAKES' FANGS.

A photograph was recently published in the *Scientific American* which showed, in a very interesting manner, a case of abnormal development of a rattlesnake's fangs. In all rattlesnakes there are, besides the poison-fangs, rudimentary ones which, if the old fangs are lost, develop and supply their place; but in the specimen under consideration the development of the second pair of fangs has proceeded while the other fangs are still *in situ*, and the curious spectacle is afforded of four powerful fangs projecting from the upper jaw. The old fallacy that a poisonous serpent kills its victim by the employment of a *sting* is at once refuted by a photographic illustration such as this, which shows that the reptile must actually get a biting-hold upon its foe before its terrible powers can be fully exercised.

IMPROVED PHOSPHORUS MATCHES.

The recent outcry for a form of lucifer-match the manufacture of which shall be innocuous to the workers has led to the introduction of a new coating composition, which is now, after a period of satisfactory trial, being used exclusively in France. The principal substance used is a combination of amorphous or red phosphorus with sulphur—the sesquisulphide of phosphorus, as it is called—which has all the good qualities without the baneful ones of the ordinary white phosphorus. It emits no vapours and can hardly be regarded as a poison, for a dose which would contain enough phosphorus to coat thousands of match-heads has no perceptible action upon an adult human being. The new product is mixed with chlorate of potash, powdered glass, &c., in order to give it the necessary inflammable and percussive qualities. A match made by the new French formula will strike on any surface, and one of its chief recommendations is that the process of manufacture is in no sensible degree altered from that of former days.

SHIPBUILDING EXTRAORDINARY.

A wonderful piece of work has recently been brought to a successful issue at the ship-building yard of Messrs Swan & Hunter at Wallsend, on the Tyne. To trace the history of the matter it is necessary to go back to the autumn of last year, when the *Milcaukee*, a steamer built by this firm, ran on a reef of submerged rocks on the coast of Aberdeen. Divers reported that a huge mass of rock had cut through the main hold of the vessel, but that the after-part of the ship, including the engine-room, remained undamaged. To save the steamer as a whole was impossible, and

the hitherto unattempted task of cutting her in half by means of separate charges of dynamite was conceived and acted upon. In the sequel, the forward section of the steamer was left impaled upon the rocks, the stern part—separated from it and floated into deep water—subsequently being towed to the builders' yard on the Tyne. Here the vessel was fitted with a new stem, and has been launched to recommence her career as a first-class ocean-going passenger steamer.

MOTOR-CARRIAGE COMPETITION.

All interested in motor vehicles should note that at the end of July there is to be a competition which will last from the 31st of that month until the 2d of August. Four classes of vehicles are eligible to compete; but they must run by their own mechanical power, the nature of that power being optional. The minimum loads are stated at two, three and a half, five, and six tons. All details as to other conditions may be obtained by application to Mr E. S. Smith, hon. secretary to the Self-propelled Traffic Association, Royal Institution, Liverpool.

PROTECTION AGAINST FIRE.

The recent burning of an hotel in New York, with awful sacrifice of life, has been the means of calling attention to the inadequacy of the ordinary means of escape available in modern buildings, and has prompted one of the London District Councils to pass a most drastic bye-law, which awaits the approval of the Local Government Board. The new regulation provides that 'every person who shall erect a new building, the stories of which shall be intended for separate occupation, shall cause a staircase constructed of fire-resisting materials to be provided outside such building, for access to every story above the lower story, when such lower story is not constructed below the level of the adjacent ground.' It will thus be seen that the new bye-law is especially intended for the protection of persons living in 'flats;' and in many districts flats are being built in preference to houses of the old suburban villa type. It will be extremely difficult to find a suitable material for these outside stairways; for, although iron appears to be the only available material, it is not fireproof, in that it gets red-hot, when it is worse than useless. The new bye-law, should it pass, will therefore afford much scope to the ingenuity of inventors.

AN OLD CANNON.

The *Sketch* publishes the photograph of a piece of ordnance which was found in the bed of the river Thames at Twickenham. Its age is computed at four hundred years. It consists of an iron tube with thick bands of the same metal welded on to it at intervals of a few inches, and has a total length of twenty-eight inches. This primitive form of cannon is without trunnions,

and it rested in a rough wooden block which served as its carriage. It is obvious that the powder used must have been of a very squib-like kind, or the recoil would have brought more injury to friends than the projectile would to foes. The contrast it affords to the modern triumphs of mechanism which now do such deadly work in warfare is extraordinary. A recent advance in field artillery equipment affords us a ready illustration.

A MOTOR-DRAWN MAXIM.

During the Easter manœuvres at Aldershot the South London Volunteer Brigade was distinguished by possessing a Maxim-gun drawn by means of a motor tricycle. The tricycle was fitted with a one-and-a-quarter horse-power motor, and was powerful enough to draw the gun up hill and down dale over some very rough ground; moreover, it went at a speed which gave the military cyclists in attendance plenty of work to keep pace with it. Recent events have shown us that victory goes with the machine-guns; and it would hardly be possible to imagine a more valuable form of weapon than one of these guns which can be moved rapidly from point to point by an attached locomotive. It remains to be seen whether the War Office will take the hint from the Volunteers, or will leave Continental armies to do so.

GOLDEN SILENCE.

UNDER the beeches we sat at rest,

In the waning summer day.

Hers was the voice that I loved the best;

Yet I found no words to say.

'Speak on, dear lips!' at length I cried,

'For your speech it is silver sweet.'

In the still blue air my pleading died,

And the brook sang low at our feet.

'Ah! like the river,

Murmur for ever!

Thy speech is so silver sweet.'

Then my words came fast. Oh, heart of mine!

Does thy stillness say, 'I love'?

The brook sang under the eglantine,

And the thrush sang high above;

But silence beneath the spreading beech!

While our hearts the moments told.

Then I laughed, 'My love hath silvern speech;

But her silence is all of gold.

Silence, love-laden—

Ah! sweetest maiden!

Such silence is all of gold.'

MARY E. PEPPIN.

* * TO CONTRIBUTORS.

1st. All communications should be addressed 'To the Editor, 339 High Street, Edinburgh.'

2d. For its return in case of ineligibility, postage-stamps should accompany every manuscript.

3d. To secure their safe return if ineligible, ALL MANUSCRIPTS, whether accompanied by a letter of advice or otherwise, should have the writer's Name and Address written upon them in FULL.

4th. Poetical contributions should invariably be accompanied by a stamped and directed envelope.

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